

PROPOSED CLAIMS:

1. (Currently Amended) An apparatus for inspecting a film carrier tape for mounting electronic component in which a plurality of electronic component mounting portions is provided in multiple ~~stripes~~ strips in a transverse direction, comprising:

an unwinding device for unwinding the film carrier tape for mounting electronic component in the multiple ~~stripes~~ strips in which the individual film carrier tapes for mounting electronic component previously cut and separated into the individual ~~stripes~~ strips are wound upon an unwinding reel, respectively;

a back tension roller;

an inspecting section for simultaneously inspecting the film carrier tapes for mounting electronic component, which are cut into the ~~stripes~~ strips, while causing them to run in parallel with each other; [and]

a drive gear;

a take-up device for simultaneously taking up the film carrier tapes for mounting electronic component cut into the ~~stripes~~ strips, which are inspected in the inspecting section upon a plurality of take-up reels attached to an identical take-up shaft in parallel, respectively; and

wherein the apparatus further comprises a guide member located at the inspection section for causing the cut strips of film carrier tapes to run in parallel with each other, the guide member comprising:

a side guide portion formed on opposed transverse ends of the guide member to guide opposed outermost sides of the parallel running strips of film carrier tapes,

a centrally located adjacent part guide portion positioned intermediate the side guide portions to guide adjacent innermost adjacent sides of the parallel running strips of film carrier tapes,

said guide member further having undercut portions defining underlying spaces beneath each transverse region between each of the outermost side guide portions and the centrally located adjacent part guide portion whereby only edge portions of the adjacent strips are engaged by the guide member and the underlying spaces do not contact a central region of the strips running parallel through the guide member, whereby interaction between the edge support provided by the guide

member and the drive gear and the back tension roller eliminates a transverse curing of the strips and causes the strips of film carrier tapes to reside in a common plane so as to locate an entire transverse width of the strips in a common focal length for simultaneous viewing of the strips in the inspecting station.

2. (Currently Amended) An apparatus for inspecting a film carrier tape for mounting electronic component in which a plurality of electronic component mounting portions is provided in multiple ~~stripes~~ strips in a transverse direction, comprising:

an unwinding device for unwinding the film carrier tape for mounting electronic component in the multiple ~~stripes~~ strips in which the individual film carrier tapes for mounting electronic component previously cut into the ~~stripes~~ strips are wound upon an unwinding reel, respectively;

a back tension roller;

an inspecting section for simultaneously inspecting the film carrier tapes for mounting electronic component, which are cut into the ~~stripes~~ strips, while causing them to run in parallel with each other; [and]

a drive gear;

a take-up device for simultaneously taking up the film carrier tapes for mounting electronic component cut into the ~~stripes~~ strips, which are inspected in the inspecting section, upon a plurality of take-up reels attached to separate take-up shafts in parallel, respectively; and

wherein the apparatus further comprises a guide member located at the inspection section for causing the cut strips of film carrier tapes to run in parallel with each other, the guide member comprising:

a side guide portion formed on opposed transverse ends of the guide member to guide opposed outermost sides of the parallel running strips of film carrier tapes,

a centrally located adjacent part guide portion positioned intermediate the side guide portions to guide adjacent innermost adjacent sides of the parallel running strips of film carrier tapes,

said guide member further having under cut portions defining underlying spaces beneath each transverse region between each of the outermost side guide portions and the centrally located adjacent part guide portion whereby

only edge portions of the adjacent strips are engaged by the guide member and the underlying spaces do not contact a central region of the strips running parallel through the guide member, whereby interaction between the edge support provided by the guide member and the drive gear and the back tension roller eliminates a transverse curving of the strips and causes the strips of film carrier tapes to reside in a common plane so as to locate an entire transverse width of the strips in a common focal length for simultaneous viewing of the strips in the inspecting station.

3. (Currently Amended) An apparatus for inspecting a film carrier tape for mounting electronic component in which a plurality of electronic component mounting portions is provided in multiple ~~stripes~~ strips in a transverse direction, comprising:

an unwinding device for unwinding the film carrier tape for mounting electronic component in the multiple ~~stripes~~ strips which are wound upon an unwinding reel;

a slit device for cutting the film carrier tapes for mounting electronic component in the multiple ~~stripes~~ strips, which are unwound from the unwinding device, into individual film carrier tapes for mounting electronic component in ~~stripes~~ strips:

a back tension roller;

an inspecting section for causing the film carrier tapes for mounting electronic component, which are cut into the ~~stripes~~ strips by the slit device, to run in parallel with each other and simultaneously inspecting them; [and]

a drive gear;

a take-up device for simultaneously taking up the film carrier tapes for mounting electronic component cut into the ~~stripes~~ strips, which are inspected in the inspecting section, upon a plurality of take-up reels attached to an identical take-up shaft in parallel, respectively; and

wherein the apparatus further comprises a guide member located at the inspection section for causing the cut strips of film carrier tapes to run in parallel with each other, the guide member comprising:

a side guide portion formed on opposed transverse ends of the guide member to guide opposed outermost sides of the parallel running strips of film carrier tapes,

Appl. No. 10/783,114
 Attorney Docket No. 1217-040374

a centrally located adjacent part guide portion positioned intermediate the side guide portions to guide adjacent innermost adjacent sides of the parallel running strips of film carrier tapes,

said guide member further having under cut portions defining underlying spaces beneath each transverse region between each of the outermost side guide portions and the centrally located adjacent part guide portion whereby only edge portions of the adjacent strips are engaged by the guide member and the underlying spaces do not contact a central region of the strips running parallel through the guide member, whereby interaction between the edge support provided by the guide member and the drive gear and the back tension roller eliminates a transverse curving of the strips and causes the strips of film carrier tapes to reside in a common plane so as to locate an entire transverse width of the strips in a common focal length for simultaneous viewing of the strips in the inspecting station.

4. (Currently Amended) An apparatus for inspecting a film carrier tape for mounting electronic component in which a plurality of electronic component mounting portions is provided in multiple ~~stripes~~ strips in a transverse direction, comprising:

an unwinding device for unwinding the film carrier tape for mounting electronic component in the multiple ~~stripes~~ strips which are wound upon an unwinding reel;

a slit device for cutting the film carrier tapes for mounting electronic component in the multiple ~~stripes~~ strips, which are unwound from the unwinding device, into individual film carrier tapes for mounting electronic component in ~~stripes~~ strips;

a back tension roller;

an inspecting section for causing the film carrier tapes for mounting electronic component, which are cut into the ~~stripes~~ strips by the slit device, to run in parallel with each other and simultaneously inspecting them; [and]

a drive gear;

a take-up device for simultaneously taking up the film carrier tapes for mounting electronic component cut into the ~~stripes~~ strips, which are inspected in the inspecting section, upon a plurality of take-up reels attached to separate take-up shafts in parallel, respectively; and

wherein the apparatus further comprises a guide member located at the inspection section for causing the cut strips of film carrier tapes to run in parallel with each other, the guide member comprising:

a side guide portion formed on opposed transverse ends of the guide member to guide opposed outermost sides of the parallel running strips of film carrier tapes,

a centrally located adjacent part guide portion positioned intermediate the side guide portions to guide adjacent innermost adjacent sides of the parallel running strips of film carrier tapes,

said guide member further having under cut portions defining underlying spaces beneath each transverse region between each of the outermost side guide portions and the centrally located adjacent part guide portion whereby only edge portions of the adjacent strips are engaged by the guide member and the underlying spaces do not contact a central region of the strips running parallel through the guide member, whereby interaction between the edge support provided by the guide member and the drive gear and the back tension roller eliminates a transverse curving of the strips and causes the strips of film carrier tapes to reside in a common plane so as to locate an entire transverse width of the strips in a common focal length for simultaneous viewing of the strips in the inspecting station.

5. (Canceled)

6. (Currently Amended) The apparatus for inspecting a film carrier tape for mounting electronic component according to claim 4, further ~~comprising a drive gear for conveying the film carrier tapes for mounting electronic component, which are unwound from the unwinding device and cut into the stripes by the slit device, while causing them to run in parallel with each other,~~

wherein the drive gear including includes:

a both end gear mated with a sprocket hole in side portions on both ends of the film carrier tape for mounting electronic component on the outermost side; and

an intermediate gear mated with a sprocket hole provided in the adjacent side portions of the film carrier tape for mounting electronic component cut into the stripes strips between the both end gears.

7. (Currently Amended) The apparatus for inspecting a film carrier tape for mounting electronic component according to claim 6, further comprising a guide roller, the guide roller including:

a side guide protruded portion on both ends which serves to guide both end side portions of the film carrier tape for mounting electronic component on the outermost side; and

an adjacent part guide protruded portion protruded to separate and guide adjacent side portions of the film carrier tapes for mounting electronic component cut into the ~~stripes~~ strips between the side guide protruded portions on the both ends.

8. (Currently Amended) The apparatus for inspecting a film carrier tape for mounting electronic component according to ~~claim 1~~ claim 4, wherein a plurality of take-up reels, which are attached to the identical take-up shaft of the take-up device in parallel with each other, are fixed into through holes provided in the vicinity of centers of the reels by means of removable engaging bar members.

9. (Currently Amended) The apparatus for inspecting a film carrier tape for mounting electronic component according to ~~claim 2~~ claim 4, wherein a plurality of take-up reels, which are attached to the separate take-up shafts of the take-up device in parallel with each other, are fixed into through holes provided in the vicinity of centers of the reels by means of removable engaging bar members, respectively.

10. (Currently Amended) The apparatus for inspecting a film carrier tape for mounting electronic component according to ~~claim 1~~ claim 4, wherein the identical take-up shaft of the take-up device is constituted by an air shaft capable of expanding to increase a diameter thereof upon receipt of supply of air, and

a plurality of take-up reels attached to the take-up shaft in parallel with each other is thus fixed to each other.

11. (Previously Presented) The apparatus for inspecting a film carrier tape for mounting electronic component according to claim 2, wherein the

separate take-up shafts of the take-up device are constituted by an air shaft capable of expanding to increase a diameter thereof upon receipt of supply of air, and

a plurality of take-up reels attached to the take-up shaft in parallel with each other is thus fixed, respectively.

12. (Currently Amended) The apparatus for inspecting a film carrier tape for mounting electronic component according to ~~claim 1~~ claim 4, wherein the inspecting section includes a magnifying lens device for magnifying the film carrier tape for mounting electronic component in order to carry out an inspection,

the magnifying lens device including a magnifying lens for magnifying, in a total width direction, the film carrier tapes for mounting electronic component, which are cut into the ~~stripes~~ strips and running in parallel with each other.

13. (Currently Amended) The apparatus for inspecting a film carrier tape for mounting electronic component according to ~~claim 1~~ claim 2, wherein the magnifying lens device has a magnification of 1.4 or more at an enlargement ratio of a length.

14. (Currently Amended) The apparatus for inspecting a film carrier tape for mounting electronic component according to ~~claim 1~~ claim 4, wherein separate dancer rollers are provided for the film carrier tapes for mounting electronic component, which are cut into the ~~stripes~~ strips, between the unwinding device and the inspecting section, respectively.

15. (Currently Amended) The apparatus for inspecting a film carrier tape for mounting electronic component according to claim 1, wherein separate dancer rollers are provided for the film carrier tapes for mounting electronic component, which are cut into the ~~stripes~~ strips, between the take-up device and the inspecting section, respectively.

16. (Currently Amended) The apparatus for inspecting a film carrier tape for mounting electronic component according to ~~claim 1~~ claim 4, wherein an identical dancer roller is provided for the film carrier tapes for mounting electronic

component, which are cut into the ~~stripes~~ strips, between the unwinding device and the inspecting section.

17. (Currently Amended) The apparatus for inspecting a film carrier tape for mounting electronic component according to claim 1, wherein an identical dancer roller is provided for the film carrier tapes for mounting electronic component, which are cut into the ~~stripes~~ strips, between the take-up device and the inspecting section.

18. (Previously Presented) The apparatus for inspecting a film carrier tape for mounting electronic component according to claim 14, further comprising a looseness control device for detecting a position of the dancer roller to control an amount of looseness of the film carrier tape for mounting electronic component.

19. (Currently Amended) The apparatus for inspecting a film carrier tape for mounting electronic component according to claim 18, wherein the looseness control device includes a guide member for separately changing a guide path for the film carrier tape for mounting electronic component in each ~~stripe~~ strip which is to be guided by the dancer roller.